

SEQUENCE LISTING

(1) GENERAL INFORMATION

- (i) APPLICANT: BLOOM, F.
KUO, JONATHAN
LIN, JHY-JHU
MA, JIN
- (ii) TITLE OF THE INVENTION: METHOD FOR INCREASING VIABILITY
AND TRANSFORMATION EFFICIENCY OF BACTERIA DURING
STORAGE AT LOW TEMPERATURES
- (iii) NUMBER OF SEQUENCES: 17
- (iv) CORRESPONDENCE ADDRESS:
 - (A) ADDRESSEE: Howrey & Simon
 - (B) STREET: 1299 Pennsylvania Avenue, N.W.
 - (C) CITY: Washington
 - (D) STATE: DC
 - (E) COUNTRY: USA
 - (F) ZIP: 20004-2402
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: Diskette
 - (B) COMPUTER: IBM Compatible
 - (C) OPERATING SYSTEM: DOS
 - (D) SOFTWARE: FastSEQ for Windows Version 2.0
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER:
 - (B) FILING DATE:
 - (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
 - (A) APPLICATION NUMBER: U.S. Ser. No. 06 014,330
 - (B) FILING DATE: 29-MAR-1996
 - (A) APPLICATION NUMBER: U.S. Ser. No. 06 025,838
 - (B) FILING DATE: 05-SEP-1996
- (viii) ATTORNEY, AGENT INFORMATION:
 - (A) NAME: Sara, Serge
 - (B) REGISTRATION NUMBER: 39 445
 - (C) REFERENCE DOCKET NUMBER: 04007-0031
- (ix) TELECOMMUNICATION INFORMATION:
 - (A) TELEPHONE: 202 388-6867
 - (B) TELEFAX: 202 388-6610

(C) TELEX:

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

CGACTCACTA TAGGGAACTG ATCCT

25

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GATTTAGGTG ACACTATAGA GATCC

25

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

CCACATATCC GGGTTTTTCG CTG

23

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

GAGGTTGGCA GGTGTATGG AGT

23

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

TATGGAGCAG GCAATCGCTG ATG

23

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

CGTGAAGTGT TCGGCGATAA GAG

23

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

AATGCGGCCT CGGCGACTAA CAC

23

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

GGTTACGGTG CGTTGGCAGG ATT

23

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

TATCAACGCC ATGCATCGCC ATC

23

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 23 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

ACTCCATACA AACTGCCAAC CTC

23

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

CTGGCGGCGG CGAAAGAG

17

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

AAATGGCTGA TCGGACTTGT T

21

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

TCCGGGGTGT CTTGTATT

19

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2653 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CGTAGNTTTC	GTTCGATTGG	CGCTCAAAAC	CGTATAGCG	CGAGTGACAA	CAACGGGCTG	60
GCAATACCAAC	CGCGGATAAT	CGCGCGTTTC	CGTTTGTGCG	TGCGCGTGGG	GTTAAACCAAC	120
GGCGCGGAGC	AGGGGAGCGG	TAATGTCTGT	TGCATCAGCG	CGCAAGGCAT	TTCCCGTTTG	180
CGCCCAAAAGC	CGTTAAGTTT	TTGCATCGTG	AATCGCGTGT	CGTGCAAAAC	CGCGCGGAGC	240
AAACCGGCGAG	ACGTAAATGT	CGCGAGCGTG	CGCGCGGAGC	CGCGCAACCT	TGCGCATGGCG	300
TTAAACAGAT	TTTGGCTGCA	CATATCGGGG	TTTTTGTGCG	CGCGCAAGCG	GTCCAGAAAC	360
CAGGCATCTA	CTTTTGTATT	TAGCGAATCG	TCCAGTTGGC	TGGTCAGTTC	GTTAAATATCG	420
CCAAACCATTA	AATCGAGCGT	CACGCGGCGT	TGATCGAGCA	ATAAACGATG	GCAACCGGGC	480
AAGGGCATTG	GCGACTGGCG	CTGAAGTTGT	TGTGCGCAGC	GAGCGAGTTC	CGGCGAGTGT	540
TGATGCGCTA	AGGCTAAATC	CGCACGGGTC	AGGGGAAATT	TGTCAAAACT	AATGAAATGT	600
AAGCGTTGTA	ATTGCGCTTG	CGGATGCGGT	TGCGCAAACT	GATCAAAATG	CTGCCATAGC	660
GTCCAGGAAT	TTAATCGGGT	GCGCAAGCGG	CTGTGTGTTA	CGCAAAACAG	AGGATGTGGA	720
TGCTCAGGAA	AGCGTACCTC	TAATTGGTTG	CGTCCGAGAA	AAACATAAAG	CGTGTCTTCC	780
AGCGCGTTAT	CGTTGGGAAA	ATAGACATCG	TCAAAATTTG	GGGAAACAGG	TGTACCGTCA	840
GCATTAAATT	CGAGGTTGCT	AGGTTGTATG	GAGTAGTGTG	TCAACGTAAAT	TACTGTCTTT	900
ACAGGCGGTC	CGTGCATCTT	AGCGATGTGT	GTAAGGCTGC	GCATATTTCT	CTATTAAATG	960
CGTGATCGGA	CTTGTTCGCG	GTACAAGTGT	ACGCTATTTG	GCATTCGAAA	CTTACTCTAT	1020
GTCCGACTTA	CAGAGGTATT	GAATGAAACG	TGCAGTGAAT	ACTGGCGCTG	GCATTGTCTC	1080
CAGCATCGGT	AATAACTAGC	AGGAAGTCTT	GGCATCTCTG	CGTGAAGGAC	GTTCAGGGAT	1140
CAGTTTCTCT	CAGGAGCTGA	AGGATTCGCG	CATGCGTAGC	CAGGTCTCGG	GCAACGTAAA	1200
ACTGGATACC	ACTGGCGCTCA	TTGACCGCAA	AATTGTGCGC	TTTATGAGCG	AGGCATCGAT	1260

TTATGCATTG	CTTTCTATGG	AGCAGGCAAT	CGGTGATGCG	GGCCTCTCTC	CGGAAGCTTA	1320
CCAGAATAAC	CCGCGCGTTG	GCTTGATTGC	AGGTTCCGGT	GGCGGCTCCC	CGCGTTTCCA	1380
GCTGTTCCGC	GCTGACGCAA	TGCGCGGCGC	GCGCGGCGTG	AAAGCGGTTG	GCCCCGTATGT	1440
GGTCACCAAA	GGGATGGCAT	CGGGCGTTTC	TGGTTGGCTC	GGCAACCCGT	TTAAAAATTCA	1500
TGGCGTTAAC	TACTCCATCA	GCTCCGCGTG	TGCGACTTCC	GCACACTGTA	TCGGTAACGC	1560
AGTAGAGCAG	ATCCAACTGG	GCAAAACAGGA	CATCGTGTTC	CTGGCGGCGC	GCGAAGAGCT	1620
GTGCTGGGAA	ATGGCTTGCG	AATTCGACGC	AATGGGTGCG	CTGTCTACTA	AATACAAACGA	1680
CACCCCGGAA	AAAGCCTCCC	GTACTTACCA	CGCTCACCGT	GACGGTTTCC	TTATCGCTGG	1740
CGGCGGCGGT	ATGGTAGTGG	TTGAAGAGCT	GGAACACGCG	CTGGCGGCGT	GTGCTCACAT	1800
CTATGCTGAA	ATGGTTGGCT	ACGGCGCAAC	CTCTGATGGT	GCAGACATGG	TTGCTCCGTC	1860
TGGCGAAGGC	GCAGTACGCT	GCATGAAGAT	GGCGATTGAT	GGCGTTGATA	CCCCAATCGA	1920
TTACCTGAAC	TCCACGGTA	CTTCGACTCC	GCTTGGCGAC	CTGAAAGAGC	TGGCAGCTAT	1980
CCGTGAAGTG	TTGCGCGATA	AGAGCCCGGC	GATTTCTGCA	ACCAAAAGCA	TGACCGGTCA	2040
CTCTCTGGGC	GCTGCTGGCG	TACAGGAAGC	TATCTACTCT	CTGCTGATGC	TGGAAACACGG	2100
CTTTATCGCC	CCGAGCATCA	ACATTGAAGA	GCTGGACGAG	CAGGCTGCGG	GTCTGAACAT	2160
CGTGACCGAA	ACGACCGATC	GCGAACTGAT	CACCTTATG	TCTAACAGCT	TCGGCTTCGG	2220
CGGCACCAAC	GCGACGCTGG	TAATGGGCAA	GCTGAAAGAT	TAATTCGAG	TAGGTGGAG	2280
TAGACGCGCC	AGCCTGGCAT	CGGACGTTAC	GCGGCAATGC	GGCCTCCGGC	ACTAACGCAA	2340
AAGGGAACCT	GATGGTTCCC	TTTTTCACAT	CATTGACAA	CGCGCGCAGT	TCCAGGCAAA	2400
CTTCCCGCTT	TGTCGATTTC	CTTCTGAAAA	GACGTACGCG	TTAAATCCTG	CCAAACGCACC	2460
GTAACCTCTGA	AACGAGAGAG	ATGAGACGGG	GATACTCTTC	GCCTTGCGCT	GCATTCTGGA	2520
GTAATGCAATG	ACTGCTGTAA	GCGAAACCGA	AACAGGATCT	TTCTGCCAAT	TTTTGGCTYT	2580
TTCCGCACTG	CTTTTGGCGG	TTTTTCTTCA	CTACATGAC	CCGTAGGCTT	GCCGTTGCGG	2640
CTTATCCCGC	TGTTTGT					2688

(2) INFORMATION FOR SEQ ID NO:15:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

TAAATTCGAG GTTGCGAGGT T

21

(2) INFORMATION FOR SEQ ID NO:16:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

AATCGACAAA GCGCGAAGTT

22

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 129 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

CTCTCTGGGC	GCTGCTGGCG	TACAGGAAGC	TATCTACTCT	CTGCTGATGC	TGGAACACGG	60
CTTTATCGCC	CCGAGCATCA	ACATTGAAGA	GCTGGACGAG	CAGGCTGCGG	GTCTGAACAT	120
CGTGACCGA						129